AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-29 (Canceled).

30. (New) Cooling equipment comprising:

a) a cooling agent supply line for supplying a cooling agent to a cooling chamber;

b) a heater with an adjustable first heating performance for heating the cooling agent supplied to the cooling chamber;

c) a first temperature sensor for measuring a chamber temperature in the cooling chamber;

d) a second temperature sensor for measuring an agent temperature of the cooling agent supplied to the cooling chamber; and

e) a controller for temperature control,

wherein the controller: (i) is adapted to detect several temperatures as control variables; (ii) is a multiple controller; and (iii) adjusts several heating performances as manipulated variables.

31. (New) The cooling equipment according to Claim 30, wherein the cooling agent supply line is connected to a cooling agent storage container in which the cooling agent is located.

32. (New) The cooling equipment according to Claim 31, wherein an evaporator with an adjustable second heating performance for evaporating the cooling agent present in the cooling agent storage container.

33. (New) The cooling equipment according to Claim 32, wherein the controller is connected on an input side to the first temperature sensor and to the second temperature sensor and on an output side to the heater and to the evaporator.

34. (New) The cooling equipment according to Claim 30, wherein several temperature sensors connected to the controller are provided for measuring the chamber temperature in the cooling chamber.

35. (New) The cooling equipment according to Claim 34, wherein the temperature sensors are arranged in a spatially distributed manner for measuring a spatial distribution of temperature.

36. (New) The cooling equipment according to Claim 34, wherein at least one of the temperature sensors is a thermocouple and at least one of the temperature sensors is a temperature-dependent electrical resistor.

37. (New) The cooling equipment according to Claim 30, wherein the heater is integrated in the cooling agent supply line.

38. (New) The cooling equipment according to Claim 30, wherein the cooling agent is nitrogen.

39 (New) The cooling equipment according to Claim 30, wherein the first temperature sensor and the second temperature sensor are connected to storage equipment that stores the temperature courses.

40. (New) The cooling equipment according to Claim 30, wherein the cooling agent supply line is adapted to empty via a diffuser into the cooling chamber.

41. (New) The cooling equipment according to Claim 30, wherein the cooling agent supply line is adapted to empty laterally into the cooling chamber.

42. (New) The cooling equipment according to Claim 41, wherein the cooling agent supply line is adapted to empty into the cooling chamber only on one side of the cooling chamber.

43. (New) The cooling equipment according to Claim 30, wherein the cooling agent supply line is adapted to empty into the cooling chamber at the top of the cooling chamber.

44. (New) The cooling equipment according to Claim 30, wherein the cooling chamber is closed.

45. (New) The cooling equipment according to Claim 30, wherein the cooling chamber is open on its bottom.

46. (New) The cooling equipment according to Claim 30, wherein the cooling chamber is portable.

47. (New) The cooling equipment according to Claim 30, wherein the first temperature sensor is arranged inside the cooling chamber and at an interval from a wall of the cooling chamber.

48. (New) The cooling equipment according to Claim 47, wherein the first temperature sensor is fastened to the cooling chamber by holding equipment extending into the cooling chamber.

49. (New) The cooling equipment according to Claim 47, wherein the first temperature sensor is attached to a sample or to a sample holder.

50. (New) The cooling equipment according to Claim 30, wherein the first temperature sensor is connected to a transponder that transmits a measured temperature in a wireless manner to the control device.

51. (New) The cooling equipment according to Claim 50, wherein the transponder is selected from the group consisting of a radio transponder, an ultrasonic transponder, an optical transponder and an infrared transponder.

52. (New) An operating method for cooling equipment, said method comprising the following steps:

a) introducing a cooling agent into a cooling chamber for cooling cooled material;

b) heating the cooling agent prior to the introducing step with an adjustable first heating performance;

c) measuring an agent temperature of the heated cooling agent;

d) measuring of a chamber temperature in the cooling chamber; and

e) controlling at least one of the agent temperature and the chamber temperature in that both temperatures are detected as control variables,

wherein a multiple controlling takes place in that a second heating performance is adjusted as another manipulated variable in addition to the first heating performance.

53. (New) The operating method according to Claim 52, further comprising the following steps:

f) evaporating the liquid cooling agent in a cooling agent storage container with an adjustable second heating performance to provide an evaporated cooling agent;

g) heating the evaporated cooling agent prior to the introducing step with the adjustable first heating performance; and

h) multiple controlling of the first heating performance and of the second heating performance.

54. (New) The operating method according to Claim 52, further comprising the following steps:

f) measuring of several spatially distributed temperatures inside the cooling chamber; and

g) multiple controlling of the first heating performance and of the second heating performance as a function of the different temperatures inside the cooling chamber.

55. (New) The operating method according to Claim 52, further comprising the following steps:

f) measuring with a thermocouple the chamber temperature and the agent temperature prior to the introducing step;

g) measuring with a temperature-dependent resistor the chamber temperature and the agent temperature prior to the introducing step; and

h) multiple controlling of the first heating performance and of the second heating performance as a function of temperatures measured by the thermocouple and of temperatures measured by the temperature-dependent resistor.

56. (New) The operating method according to Claim 52, further comprising the following steps:

f) setting a target value in the cooling chamber,

g) controlling the agent temperature of the cooling agent entering into the cooling chamber in accordance with the target value set for the cooling chamber by adjusting the first heating performance.

57. (New) The operating method according to Claim 56, wherein the agent temperature of the cooling agent entering into the cooling chamber is controlled to the target value for the chamber temperature in the cooling chamber.

58. (New) A method of cryopreserving a biological sample comprising cooling the biological sample in the cooling equipment according to Claim 30.